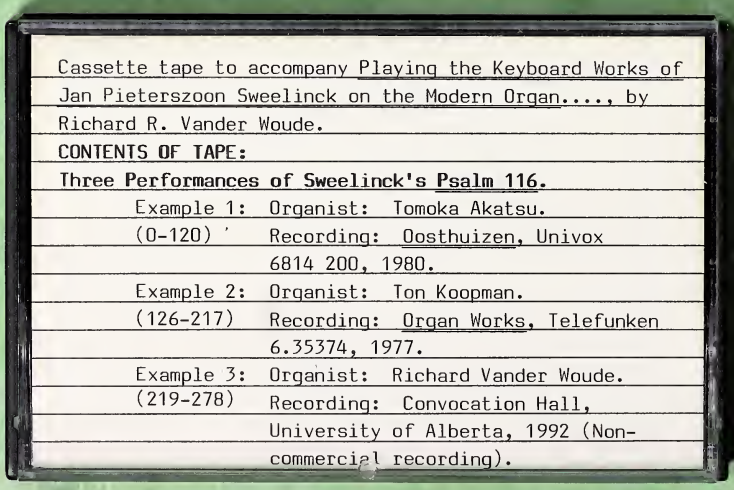
Playing the Keyboard Works of Jan Pieterszoon Sweelinck on the Modern Organ: Performance Considerations for Psalm 116 Ik heb den Heer lief.

by

Richard R. Vander Woude



Cassette tape to accompany Playing the Keyboard Works of Jan Pieterszoon Sweelinck on the Modern Organ...., by Richard R. Vander Woude.

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Three Performances of Sweelinck's Psalm 116.

Example 1:	(0-120)	Organist: Tomoka Akatsu. Recording: Oosthuizen, Univox 6814 200, 1980.
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Example 3:	(219-278)	Organist: Richard Vander Woude. Recording: Convocation Hall, University of Alberta, 1992 (Non-commercial recording).

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Playing the Keyboard Works of Jan Pieterszoon Sweelinck on the Modern Organ: Performance Considerations for *Psalm 116 Ik heb den Heer lief*

by

Richard R. Vander Woude

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in

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Date: April 18, 1992

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Richard R. Vander Woude

Playing the Keyboard Works of Jan Pieterszoon Sweelinck on the Modern Organ: Performance Considerations for *Psalm 116 Ik heb den Heer lief*

Master of Music (Applied Keyboard)

1992

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Richard R. Vander Woude

April 18, 1992

Every organist makes decisions concerning performance aspects of a work before performing a composition in public. In the concert hall, organ renaissance music presents a number of additional problems pertaining to authenticity and consequently performance practice. In a liturgical setting, the church organist deals with these performance practices and addresses two further questions -- is the work appropriate in a liturgical context, and can it be played on the pipe organ in the church building? The first is easily answered by determining whether the work falls into the category of liturgical repertoire that has been preserved from the renaissance and early baroque period. The second question is difficult to answer because it is asking a more subjective query: can the organ at the disposal of the church musician successfully represent this repertoire? To answer such a question, one needs to comprehend the organisation and style of the piece in question and how that relates to the realization of that music on a specified instrument. This study will address structural designs used in Jan Pieterszoon Sweelinck's set of variations on Genevan *Psalm 116 Ik heb den Heer lief* and compare the renaissance organ on which this piece was played to a twentieth-century, neo-baroque instrument.

Structural Design of *Psalm 116*

Frits Noske, a Sweelinck scholar, describes two methods used to analyze the structure of any composition.[1] The first is labelled *forma formata* or the formed form. One applies preconceived structures to works with the intent to discover form and the processes of composition. For example, a chorale variation assumes the phrase structure of the cantus firmus; sonata form employs an exposition, development, and recapitulation. In renaissance keyboard music, one finds that such compositions as the ricercare, toccata, versets based on chant, and canzone (to name a few) are well established. Unfortunately, musicologists Willi Apel and Robert Tusler, who regard Sweelinck's variations as excellent in detail but loose in

form, have tried to evaluate his compositions through models other than those found in the renaissance keyboard literature. They describe the psalm/chorale variations with ambiguous captions such as "Interrupted Pedal Point Cantus Firmus"[2] and "stable structure of harmony and Cantus Firmus."[3] The variation cycle was developed by Sweelinck as a new keyboard idiom,[4] and "... apart from the fantasia, no other form of keyboard music cultivated by Sweelinck proved as influential ...."[5] The chorale/psalm variations are forerunners to the chorale partitas and preludes of Samuel Scheidt, Georg Böhm, Dieterich Buxtehude and Johann Sebastian Bach. Rather than measure Sweelinck's works against the works of these later composers, one should discover the framework with which he worked. Noske calls this *forma formans*, the analysis of the form forming itself.

Noske's *forma formans* requires one to approach a composition not from the point of view of structure but from factors such as meter, pulse and deviations from this pulse. Utilization of these elements creates the structure and in Sweelinck's music, Noske describes this as movement.

> They are the time factors affecting our experience of time. They cause psychic deviations from the clock time and may therefore be viewed as categories of tension. Thus, the number of basic structure factors is limited to three: acceleration, retardation and stabilization.[6]

Acceleration, retardation and stabilization are evident in the organization of vertical and horizontal aspects of pitch: melodic rhythm and harmonic rhythm. By proceeding with an analysis of structural elements in Sweelinck's variation cycle on *Psalm 116*,[7] it can be seen that the structures in his compositions represent "... a calculated handling of factors of motion."[8]

Psalm 116 is a set of four variations divided into two sections, each made up of two variations connected by continuous underlying voices. In the first section, Sweelinck sets independent melodic lines against the unadorned psalm tune in bicinium and tricinium forms. In the second, he places the embellished tune in three- and four-part textures.

Table 1 shows the structure found in the first variation, outlined by the melodic and harmonic rhythm:

TABLE 1

	MELODIC RHYTHM			HARMONIC RHYTHM
	# of Ms.	Measures	Ratio	# of bars/change
8	{ 3½	1-4	2:1	3-1
	{ ½	4 str. to	4:1	
	{ 2	5-6	4:1	2
	{ 2	7-8 str. to	8:1	1-1*
13	{ 13	9-21	8:1	1½ ½ ¾ ¼ 1 ½ ½ ½ ½ 1* 1 ½ ½ 1 1 ½ ½
	{ 2	22-23 str. to	4:1	½ ½ 1 1*
8	{ 4	24-27	4:1	½ ½ ½ ½ ½ ½
	{ 2	28-29 str. to	8:1	1½ ½
	Bridge	30-33	8:1	1* ¾ 1¼

str. = stretto -- denotes the overlapping of melodic rhythm
* -- denotes psalm tune phrase endings

The melodic rhythm establishes the pulse or tactus as the half note. This is the constant.[9] In determining acceleration, retardation and stabilization of the melodic and harmonic rhythms, the constant and the deviations from this constant need to be identified. A passage with quarter notes moves at twice the speed of the constant and is notated as a ratio of 2:1; eighth notes as 4:1 and sixteenth notes 8:1. The harmonic rhythm is determined by the number of changes within a defined parameter and for this study, the parameters are the bar lines found

in the *Opera Omnia* edition of Sweelinck's works.[10] A harmonic rhythm changing with every half-note pulse in a four-beat measure is notated as ½; every quarter as ¼ and every whole note as 1.

This analysis of the melodic rhythm immediately reveals a symmetrical design. The second voice works independently of the psalm tune, dictating the structure of this variation through its melodic rhythm. The psalm tune also shows a symmetrical design, but is not reflected by the order or structure of the figuration used in the second voice. The latter figuration is built on the proportional ratios found in the acceleration and retardation of the melodic rhythm. This line begins at twice the speed of the psalm tune, doubling after a transition in m. 4 and once again at the middle section of the variation. Sweelinck then pulls back in m. 22, returning to the 4:1 ratio as the variation closes, but instead of returning to the opening speed as symmetry would appear to require, he returns to the 8:1 ratio and forms a bridge to the second variation.

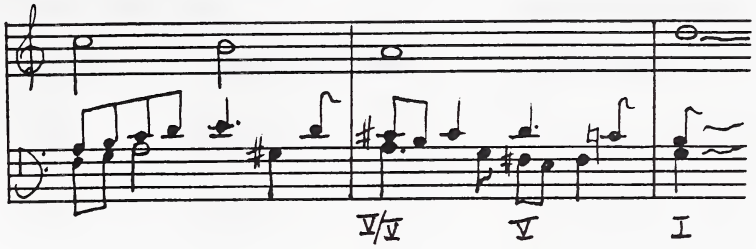
The harmonic rhythm is the unifying factor between the two voices in this bicinium. It slows naturally to highlight the phrase endings of the psalm tune, but maintains the structure dictated by the melodic rhythm; it slows or stabilizes during transitional strettos to new speed ratios (mm. 4, 7-8), and accelerates/retards during sections of figural and melodic stability. Sweelinck has superimposed the symmetry of the melodic rhythm found in the accompanying voice onto the structure of the psalm tune, supporting both through factors of harmonic movement.

The second variation has the following structure:

TABLE 2

	MELODIC RHYTHM			HARMONIC RHYTHM
	# of Ms.	Measures	Ratio	# of bars/change
7	{1	33 str. to	4:1	1
	{6	34-39	4:1	1 ½ ½ 1 1 1 ¼ ½ ¼*
7	{1	40 str. to	8:1	1
	{6	41-46	8:1	1 1¼ ¼ ¼ ¼ ... ½ ½
3	{1	47 str. to	4:1	1
	{2	48-49	2:1	½ ¼ ¼* ¼ ¼ ¼ ¼ ¼
6	{6	50-55	4:1	1 ¼ ½ ¼ ½ ½ 1 ½ ½ ½ ½
3	{1	56 str. to	2:1	1
	{2	57-58	2:1	1* ¼ ¼ ¼ ¼
7	{1	59 str. to	4:1	¼ ¼ ¼ ¼
	{6	60-65	4:1	½ ¼ ¼ 1 1 ½ ½ 1
2	{2	66-67 closing		2*

The texture of the first variation is changed with the entrance of the third voice, introduced in the transition to the second variation (m. 34). The psalm tune dictates the structure of this variation; the melodic rhythm of the two accompanying voices follows the natural contours of the cantus firmus. Unlike the continuous rendering of the psalm tune in the first variation, each phrase is interrupted by interludes made of contrapuntal pre-imitation material. The bridge between the second and third phrases marks a return to the slowest melodic rhythm ratio, which was present in the opening of the first variation. This retardation of the melodic rhythm contrasts with the harmonic rhythm which continues at a fast pace. The tension between melodic and harmonic rhythm is maintained or stabilized through innovative harmonic progression (Ex. 1) and an extended, playful, syncopated figuration. This figuration leads to a rapid retardation of the harmonic rhythm and a natural slowing of the melodic rhythm, resolving the tension and ending the first half of the piece.

Ex. 1 ***Psalm 116*** **(mm. 51-52)**

The final two variations explore the use of the embellished cantus firmus line in a figurative manner. Sweelinck strictly maintains the psalm tune and its meter within the embellishment (Ex. 2). The circled notes indicate the psalm tune within the diminution.

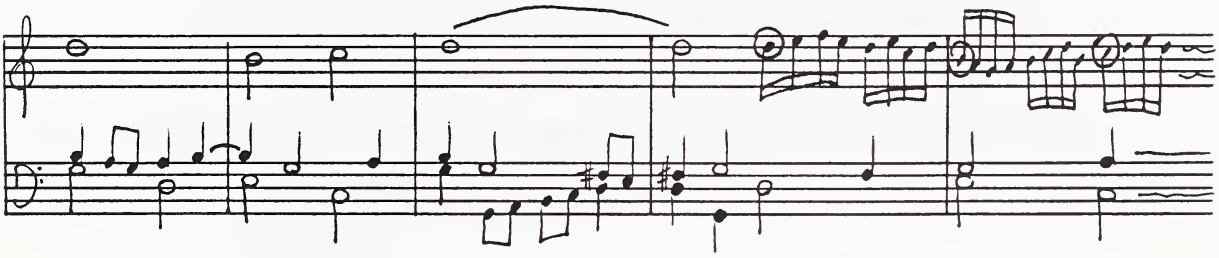
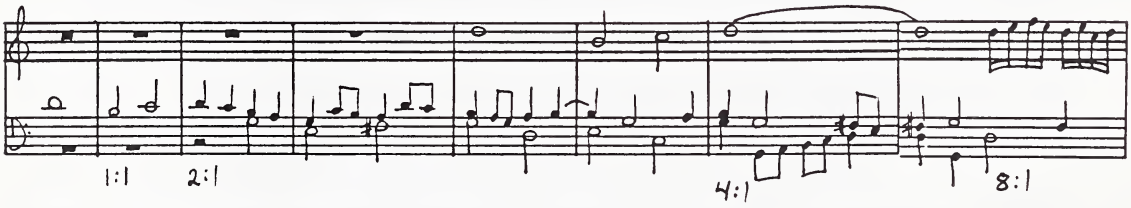
Ex. 2 ***Psalm 116*** **(mm. 72-76)**

Since the clear half-note movement of the psalm tune is hidden in the diminution, Sweelinck uses the harmonic rhythm to underline the tactus through the use of the half-note chords in the accompanying voices. (It is in these situations that Sweelinck breaks from strict contrapuntal writing and adds an extra voice.) The tune is the backbone of the structure.

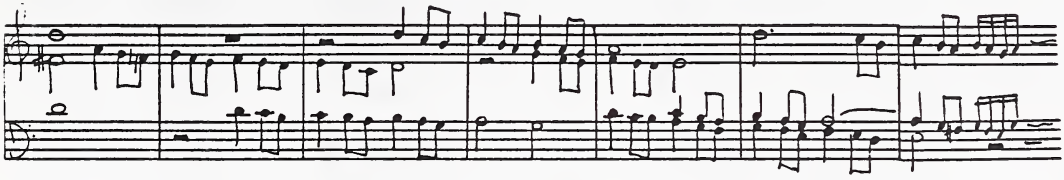
TABLE 3

	MELODIC RHYTHM		HARMONIC RHYTHM
# of Ms.	Measures	Description and Ratio	# of bars/change
11 { 4	68-71	pre-im. 1:1 - 2:1 - 4:1	3 1
{ 7	72-78	1st phrase 8:1	1 1 ¾ ½ ¾ ½ ½ 1 2
9 { 1	79	bridge 8:1	1
{8½	80-87½	2nd phrase 2:1 - 8:1	1 ½ ½ ½ ½ ... 1 1
9 { 2	87½-89½	pre-im. 4:1	1½ ½ ½
{7½	89½-96	3rd phrase 4:1 - 8:1	½ ½ ½ ... 1 ½
8 { 1	97	pre-im. 8:1	½ ½
{ 7	98-104	4th phrase 8:1	1 ½ ½ 1 ½ ½ ½ ½ 1 ½ ½ 1

The macro-structure of the third variation is shown in Table 3. Noske explains that the structural factors of acceleration, retardation and stabilization can also be seen in the micro-structure of a work and the variation lends itself well to this type of analysis. In the first pre-imitative section (mm. 68-75), the acceleration principle is used, employing the ratios 1:1, 2:1, 4:1, finally the psalm melody appearing at 8:1 (Ex. 3).

Ex. 3 ***Psalm 116*** **(mm. 68-75)**

The beginning of this variation and the bridge to the third phrase demonstrate a compositional approach taken by Sweelinck for purposes of acceleration, the shortening of distances between successive entries of similar material. In mm. 68-70 (Ex. 3), the tenor voice sounds alone for five half-note pulses before the bass enters in m. 70. The next entry, the cantus firmus, appears after only three pulses, an acceleration of entry speed for the

imitative voices. The bridge to the third phrase illustrates this device more clearly, employing entry ratios of 2:1:0 (Ex. 4).

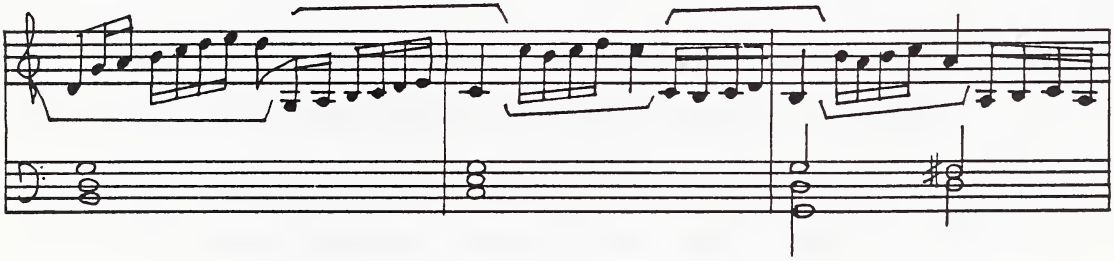
Ex. 4 ***Psalm 116*** **(mm. 87-94)**

The second phrase (mm. 80-87) of this variation stabilizes the momentum created by the acceleration of the opening phrase through the use of one figure. The tactus is accentuated by half-note chords in the left hand. The melody is embellished by a single repeated figure. The end of each phrase is marked by a natural reduction of the harmonic rhythm, a form of retardation. The bridges to the third and fourth phrases (mm. 87-89 and mm. 96-97) anticipate the embellishment of the psalm tune.

In the fourth variation (see Table 4), the harmonic pulse of the half note is constant, with the exception of places where a figure covers two pulses (mm. 105-107, mm. 109-110 and mm. 131-132) and where the figuration is echoed in a different register (mm. 117-118). The first bridge passage (mm. 113-114) proceeds in a quarter-note pulse with notes descending from a high to a low register. The ratios of the melodic rhythm fluctuate within each phrase but are stabilized by the relatively uniform harmonic rhythm. The fluctuations are a result of the figurally embellished cantus firmus line. As each figure progresses to the next, new melodic rhythm ratios are used.

TABLE 4

	MELODIC RHYTHM		HARMONIC RHYTHM
# of Ms.	Measures	Description and Ratio	# of bars/change
9 { 2	105-6	bridge 8:1	2
{ 7	107-13	1st phrase 8:1 - 2:1	2½ ½ 2½ ½ 1 ½ ¼
9 { 1	113-14	bridge 2:1	¼ ¼ ¼ ¼
{ 8	115-22	2nd phrase 2:1 - 8:1 - 4:1	½ ½ ½ ½ 1 1 ½ ½ ½ ½ 1 1
9 { 1	122-3	bridge 4:1	1 ½ ½
{ 8	124-31	3rd phrase 1:1 - 4:1 - 8:1	1 ½ ½ 1½ ½ ½ ... 1
8 { 1	132	bridge 8:1	1
{ 7	133-39	4th phrase 8:1	1½ ½ 1 1 ½ ½ 1 1

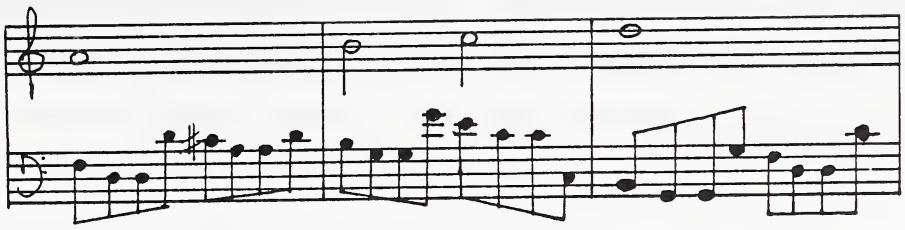
Sweelinck uses a spatial device (echo) to extend the use of figures (Ex. 5).

Ex. 5 ***Psalm 116*** **(mm. 117-119)**

In the bridge to the third phrase (mm. 122-23), the first three notes of the third phrase are pre-imitated. This "false start" functions as a large-scale echo effect. The pulse of the third phrase is highlighted by a series of suspensions. A syncopated figure in the upper voice embellishes the melody. Both the suspension and the syncopated figure are used for the first time in this piece. The final phrase (mm. 134-139) combines a fast melodic rhythm with a steady half-note pulse harmonic rhythm, and brings the work to a highly energized conclusion.

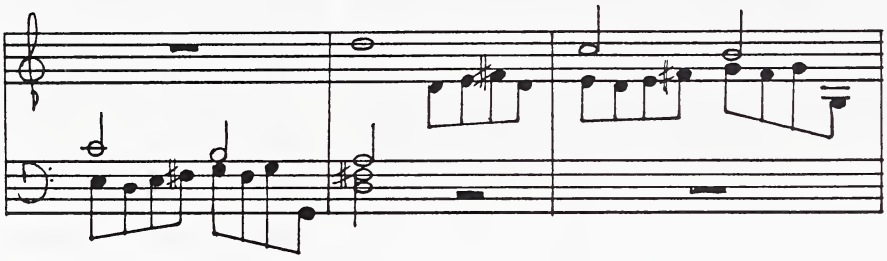
Sweelinck's techniques for embellishing a melody are evident in the last two variations. The psalm tune is unaltered in pitch and rhythm. Figuration, contrapuntal writing, and structural factors maintain variety and interest. Tusler adds that "... ornamentation [embellishment] ... became, in Sweelinck's hands, a highly expressive tool, expressing the emotional context of each melodic phrase, yet still observing the individual properties of the borrowed theme."[11] Through figural diminution, Sweelinck's embellishment evokes emotion. Tusler is right to point this out, although it is important to realize that the emotional content of the figuration is not that associated with the psalm text. Textual associations in such figuration of keyboard music become more apparent in the organ music of the generations following Sweelinck but, as is evident in *Psalm 116*, the seeds were planted for this more "affective" approach in his keyboard compositions.

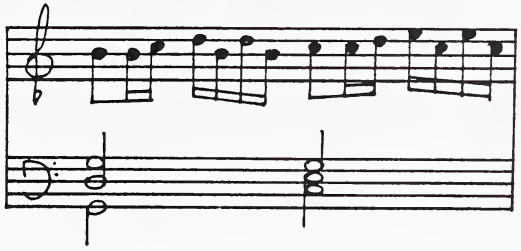
Figuration is also used extensively in the contrapuntal lines accompanying the psalm tune. This reveals the strong influence of the English virginalists on Sweelinck's compositional vocabulary and how thoroughly it was incorporated into his works. Alan Curtis outlines several figurations common to Sweelinck and the English virginalists.[12] *Psalm 116* demonstrates all of these figurations. Some figures are characterized by large disjunct movement within a single chord (Ex. 6a and 6b). Example 6c shows oscillating thirds. This is also seen with intervals of a sixth or an octave.

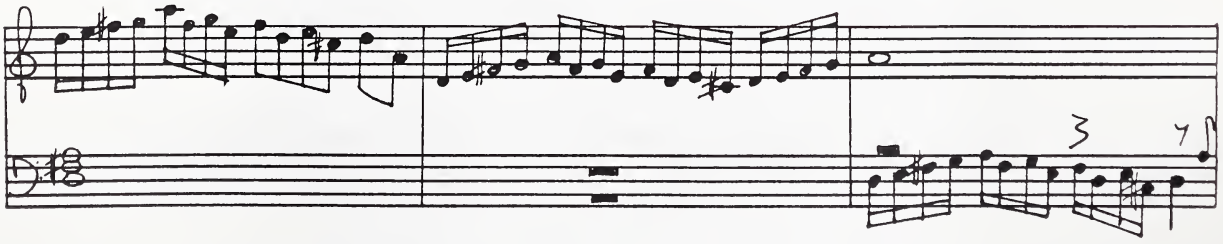
Ex. 6a ***Psalm 116*** **(mm. 25-27)**

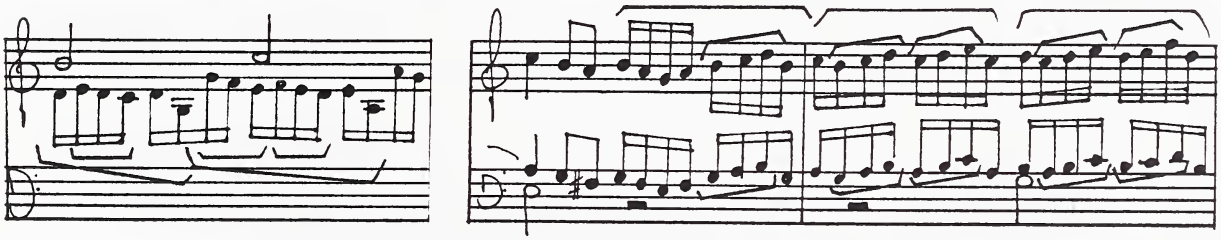
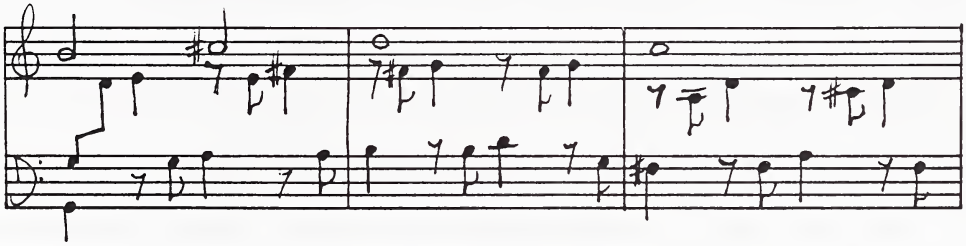


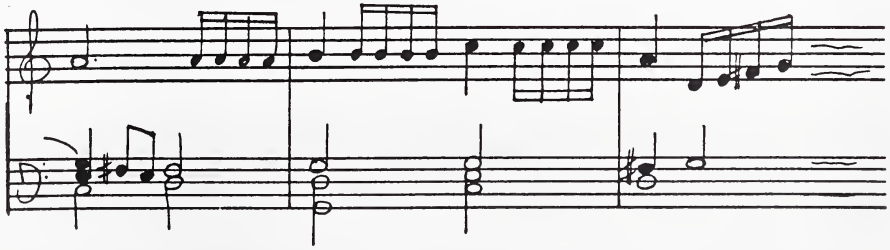
Ex. 6b ***Psalm 116*** **(mm. 123-125)**



Ex. 6c ***Psalm 116*** **(m. 134)**

The "zigzag figure" (a term coined by Curtis) outlines the triad with small conjunct motions (Ex. 7).

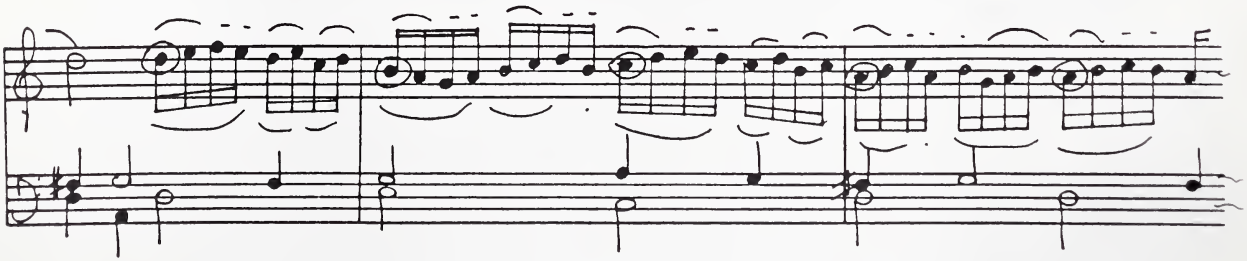
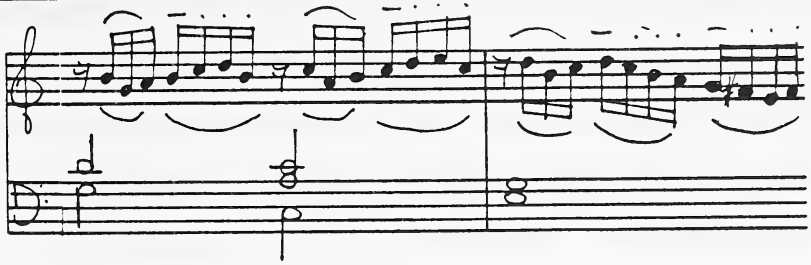
Ex. 7 ***Psalm 116*** **(mm. 131-133)**

Other figures use conjunct motion. One tendency in such figures is toward a rhythmic displacement of a repeated motive, in this case a group of three sixteenth notes, within a florid sixteenth-note passage, which irregularly juxtapose patterns of three sixteenth notes within a context of common time (Ex. 8a). Sweelinck often uses conjunct motion with disjunct movement to create syncopated lines (Ex. 8b).

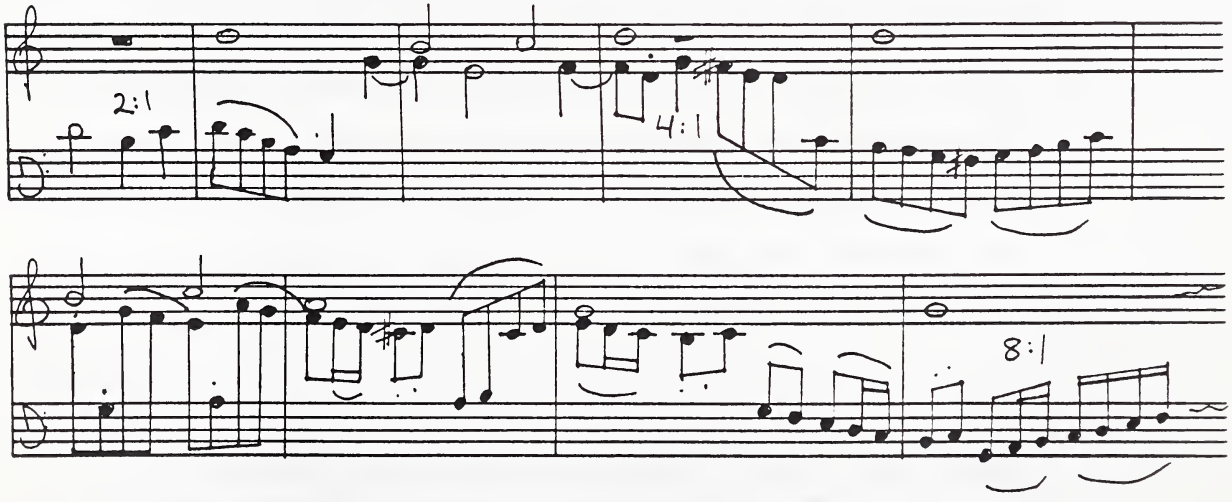
Ex. 8a ***Psalm 116*** **(m. 10 and mm. 93-94)**

Ex. 8b ***Psalm 116*** **(mm. 60-62)**

A final classification of figuration is characterized by note repetition. The trillo, imitating the vocal trillo used in seventeenth-century Italy, consists of a repeated-note formula (Ex. 9).

Ex 9 ***Psalm 116*** **(mm. 101-103)**

Sweelinck's use of figuration is very idiosyncratic. He goes beyond the English virginalists by employing it in a line that develops contrapuntally. Sweelinck modified the progression of the figure "... with a special concern for continuity [and] ingenious handling of time factors."[13] Each statement of a figure is a development of its predecessor. Through such a succession of figures, Sweelinck is able to accelerate, retard or maintain the melodic rhythm of each voice convincingly, consequently creating a structure on which a composition can be built.

Performance Considerations

Practical application of the observations made above is relevant to the psalm tune and to the figuration as it works within the structure of each variation. The cantus firmus in *Psalm 116* is not the structural backbone in the first variation (Table 1). Special care needs to be taken at phrase endings of the psalm tune, particularly when they appear without breaks. Each whole-note found in measures 8, 16, 24, and 32, can be shortened to clarify the ends and beginnings of the phrases. This is done for the performer in the second variation by means pre-imitative interludes. The final two variations embellish the psalm tune with diminution and figuration. Sweelinck does maintain the integrity of the melody by beginning each figuration on the note of the psalm tune. These notes can be stressed in performance. Example 10a and 10b show two possible ways one might accentuate the psalm tune notes for the beginning of the third and fourth variations.

Ex. 10a ***Psalm 116*** **(mm. 75-77)**

Ex. 10b ***Psalm 116*** **(mm. 108-109)**

Figuration works within the structure of each variation through acceleration, retardation, or stabilization of the melodic rhythm. For the performer, this means that the figures used by Sweelinck need to be identified. The keyboardist also requires an understanding as to how they progress from one to the other. Example 11 demonstrates how figuration works with regard to the structural principle of acceleration and how one might inflect this in performance. Each figure is illuminated, the progression of figures is recognized, and the structure of the melodic rhythm remains intact.

Ex. 11 ***Psalm 116*** **(mm. 1-9)**

The variations on *Psalm 116* show Sweelinck to be a master of design and formal structure. This is not always clearly understood, and Noske correctly summarizes that "... he [Sweelinck] never betrayed the intimacy of his art. His genius does not reveal itself spontaneously; it is disclosed only by dint of insight and knowledge."[14] The performer of Sweelinck's works is obligated to discover these intimacies. Understanding Sweelinck's structural tools is the key to vibrant performances of his works.

Choice of Instruments

The sources of Sweelinck's compositions do not indicate a specific keyboard instrument. As with all of his keyboard works, *Psalm 116* functions as well on the harpsichord as it does on the organ. Tusler attempted to designate all Sweelinck's keyboard music for organ or harpsichord based on compositional features idiomatic to either instrument,[15] but is rightly reprimanded by Noske for not understanding Sweelinck's role as musician in the new Protestant church. All of his keyboard works would have been played on both instruments: the harpsichord and clavichord for home entertainment and practice, the organ for daily recitals.[16] The organ, before the introduction of electric blowers, required manual labour for the operation of the bellows, rendering practising impractical and costly; organists used the harpsichord and clavichord as practice instruments. Bernard van den Sigtenhorst Meyer points out that in Sweelinck's rigorous performance schedule on the *Oude Kerk* organs:

> ... he performed the psalms, which would have been his first and natural choice for playing, particularly his own settings, followed by his other works, his fantasies, toccatas, echo-fantasies and chorale variations.[17]

Psalm 116 could easily have been performed on both the organ and stringed keyboard instruments.

The Organs of the *Oude Kerk*

Performing *Psalm 116* requires a knowledge of the work's formal aspects and comprehensive information on the renaissance organs, particularly those that Sweelinck played. Many secondary sources of information about the *Oude Kerk* organs list only the specifics of registration but mention little about aspects of construction which would directly affect registration. By examining the differences between the modern church organ, built to accommodate all organ literature, and the renaissance instruments of the *Oude Kerk* in Amsterdam, the performer can appreciate the possibilities and limitations of registration and articulation for playing renaissance keyboard music on such modern organs.

Two organs hung on the west and north walls of the *Oude Kerk* when Sweelinck began his tenure as organist in 1577.[18] These instruments were built by the famous Dutch builder, Henrick Niehoff with help from Hans Van Coelen on the large organ and from Jasper Johanson on the small organ. Niehoff was a well-trained, well-travelled organ builder, considered to be progressive in 1539.[19] Organ-building techniques and principles described by Henri Arnault de Zwolle in his treatise of ca. 1450,[20] by Arnold Schlick in his *Spiegel der Orgelmacher und Organisten* of 1511,[21] and later in *De Organographia* of Michael Praetorius in 1619[22] were incorporated in the *Oude Kerk* organs. These instruments were recognized as the "best in Christendom."[23] Although the original organs no longer exist, the contracts of their initial construction and subsequent alterations provide several important

clues to their properties. To facilitate further discussion, only the large instrument will be discussed in detail as the two organs share similar qualities.

The large instrument was built for solo use. The only liturgical function of the organ at this time was verse alternation and choir accompaniment.[24] With the Calvinist Reformation, the religious orientation of the *Oude Kerk* changed (ca. 1578), and the organ became silent during the service. However, the organ was owned by the town council and was used to entertain town people and visiting dignitaries before and after church services, much to the chagrin of the church officials.[25] The organ, built for the primary purpose of solo use with limited liturgical functions, consisted of the most advanced organ-building techniques then known. Although these organs were replaced in 1658 (small organ) and 1724 (large organ) for reasons of expanding liturgical needs,[26] the surviving contracts for the *Oude Kerk* organs, along with other extant Niehoff instruments, tell of the general characteristics of these organs and similar instruments found throughout Europe.[27]

Original contracts from 1539, 1545, 1567, 1659, and 1682 list the changes made to the *Oude Kerk* organ.[28] The contract for a major renovation in 1619 (probably initiated by Sweelinck) is unfortunately lost; this was a document which might have "... inform[ed] us about Sweelinck's opinions on the organ which he played for so many years."[29] The extant contracts and surviving Dutch renaissance organs provide details which concern performance, particularly temperament, pitch, pipe and chest construction, and physical characteristics of keyboard construction. The latter two concerns have direct implications for registration and keyboard manipulation, while the former are not easily altered by the performer.

The temperament of the renaissance organ is a subject of much speculation. Arnold Schlick, whose publication of the *Spiegel* appeared twenty-eight years before the 1539 construction of the large organ in the *Oude Kerk*, spends a great deal of time discussing "adjustments" to a tuning method to play in keys other than those possible on the old system of tuning.[30] This discussion is commonly assumed to indicate Schlick's preference for a pure-third tuning (meantone) over the old Pythagorean tuning system of pure fifths. Mark Lindley refutes this by showing that meantone tuning was used as early as the fifteenth century, and that the sixteenth century saw alterations to this system.[31] Harold Vogel adds that, based on unaltered pipe lengths of extant sixteenth- and seventeenth-century instruments, a modified meantone was commonly used early in the sixteenth century.[32] Alan Curtis supports this claim too. He examines chromaticism in Sweelinck's keyboard works, and concludes that a modified meantone temperament was most likely employed.[33] Cor Edskes, the supervisor of the restoration of historic instruments for the Dutch government states that, "... the only thing known about this [the temperament of the *Oude Kerk* organ] is that it was unequal. There is reason to assume that meantone tuning ... was not used by Dutch organ-builders of Sweelinck's time. They may have employed some sort of intermediary system between Pythagorean and meantone tuning."[34] Despite their speculation, these comments point to a modified meantone temperament in the *Oude Kerk* organ which was more flexible than quarter-common meantone. However, the differences between a modification of meantone temperament and equal temperament are still great. A modified meantone temperament, with its purer intervals, produces greater distinction between "good" and "bad" chords. Sweelinck worked with, and his keyboard compositions sound best in, such a temperament. Preference should be given to a temperament similar to that of the *Oude Kerk* organs.

The pitch of the renaissance organ is an area of even more speculation. Attempts to discover any historical pitch based on pipe lengths described in treatises and found on extant organ pipes are imprecise. Often, the extant pipes have been "adjusted" through renovations to the surviving organs and treatises such as Schlick's and Praetorius' are subject to a number of problems,[35] their data on pipe lengths and pitches being generally so ambiguous as to render their interpretation open to speculation only, with no firm conclusions.[36]

Praetorius mentions a number of pitches used in Germany and other countries, including the Netherlands:

> In England formerly and in the Netherlands still today [1619], most of the wind instruments are tuned a minor third lower than our present chamber pitch ... and the excellent instrument maker at Antwerp, Johannes Bossus, made most of his harpsichords and spinets, as well as pipeworks built there, tuned to this same low pitch.[37]

Arthur Mendel states that this low pitch described by Praetorius is just above the modern a=440 hz pitch,[38] while Alexander Ellis' conclusions place this pitch just below today's pitch.[39] This proximity to today's pitch is substantiated by the extant 1610 organ of the Brunswick builder, Esaias Compenius, which now stands relatively unchanged in *Schloss Fredricksborg* in Hillerød, Denmark. This organ is pitched approximately one semitone above a=440 hz. Edskes summarizes that "... comparisons to other Niehoff organs could point to a pitch just below that current today, but this is by no means certain, since the *Oude Kerk* organs need not have conformed to Niehoff's others."[40] It is interesting that the evidence suggests an organ pitch near to that of today's pitch. Although the determining of renaissance organ pitch will never be indisputable, the Netherlands organ pitch may well have corresponded roughly to today's modern pitch.

The organ Sweelinck knew (see Appendix 1) was constructed with three divisions. The main division, called the *Principael* (*Hauptwerk*), consisted of four stops: a twelve-foot *doef* (principal), a six-foot octave, and a divided mixture (*mixtuur* and *sherp*). This division of the organ is essentially a medieval *blockwerk* which, as shown by Praetorius[41] and Schlick,[42] sounded all pipes of a particular pitch when a key was depressed by the player. This was the common chest design before the invention of the slider and spring chests, which allow the organist to play each rank of pipes individually. The spring chest, considered more reliable but more difficult to build and maintain, was perfected by Niehoff and is almost always found on Dutch instruments of the sixteenth and seventeenth centuries, including the *Oude Kerk* organs.[43]

The ranks of pipes were built on the medieval *blockwerk* principle. Arnault de Zwolle describes the *blockwerk* as having "... many more ranks in the treble than in the bass ... six pipes per note in the bass to seventeen per note in the treble."[44] Maarten Vente substantiates this claim through the specifications of the *blockwerk* on the organ of the *Nikolai Kerk* in Utrecht built fifty years before the organs in the *Oude Kerk*. He shows that the bass constitutes eight ranks, but through doubling and tripling of the various ranks, the treble has up to seventeen ranks of pipes.[45] Edskes points out that "... most of the principal stops will have double pipes in the treble, possibly even triple pipes."[46] The mixtures in the *Oude Kerk* may have ranged from seven to more than twenty.[47] The uniform scaling and the fact that this renaissance instrument had variable ranks (bass to treble) allowed for accentuated treble lines, which conform to features of Sweelinck's compositional style.

The second division, called the *Bovenwerk*, consisted of two spring chests and housed the "colour" stops (reeds, flutes and a mutation stop). The double-chest division was a logical progression from the *blockwerk* organ built before 1500. To initiate changes in registration, the medieval player had to play a second manual (in effect, a different *blockwerk*) as found on the Halberstadt cathedral organ of 1361,[48] or activate a ventil which would stop wind from entering portions of a divided chest on a single manual instrument.[49] With the development of the slider/spring chest, the multi-chest divisions were used to improve winding to all pipes. When two stops were added to the *Bovenwerk* of the *Oude Kerk* organ in 1567 (bringing the total to nine stops), the second chest (drawing its wind from the first) was added to accommodate the extra ranks and ensure proper winding.

The wind supply for the *Oude Kerk* organ was not like the winding system of the Halberstadt organ described by Praetorius;[50] only six hinged bellows were specified in 1539 and were later replaced by six larger hinged bellows in 1567. Even though these bellows were more efficient than the "blacksmith" bellows, the chest had to remain small and the player had to be cautious not to draw out too many stops at once.[51]

The third division, the *Rückpositiv*, also had two chests for the reason stated above (the *Bovenwerk*). The lower chest was designed as a miniature *blockwerk* to complement the *Principael*. The upper chest held three reed stops, a mutation, a flute and a Quintadena (a rank emphasizing the fifth of the scale). The chests on the *Rückpositiv* might have been slider chests as opposed to spring-chests found on the *Bovenwerk* and *Principael* because of the slider-chest's lighter compact construction. The *Rückpositiv's* precarious position, hanging over the edge of the balcony, would make this chest construction desirable. The *Rückpositiv*

and *Bovenwerk* could be coupled together, but not to the *Principael*. This seems to be a unique feature on the *Oude Kerk* organ and will be explained below.

The pedal had two independent stops, equivalent to an eight-foot trumpet and a two-foot Nachthorn, which were used as solo stops. Close examinations of other extant Niehoff instruments and the *Oude Kerk* organ contracts seem to indicate that these ranks of pipes were placed on the *Principael* chest.[52] The other pedal function consisted of coupling (by means of pull downs from the keys to the pedal) to the lowest twelve notes of the *Principael*, providing a bass accompaniment. Sweelinck's compositions point to extensive use of the pedal for both solo and bass accompaniment functions.

The nature of the sound of the *Oude Kerk* organ can be estimated from extant Niehoff pipe work. The facade pipes seemed to be made of high quality tin and the inner pipes of thick-walled lead. The scaling of the principal pipes was uniform throughout the rank, resulting in a sound "somewhat lighter in the bass and ... rather round in the treble."[53] The flutes were wide-scaled by today's standards, producing a rich fundamental sound. The reeds were penetrating.[54] The cut-ups of the flues were high, as described by Arnault de Zwolle, and can also be seen on the 1511 organ in Oosthuizen, North Holland.[55] The high cut-ups required large amounts of wind, implying a high wind pressure which Edskes estimates to be about 90 mm of water pressure.[56] All this creates a "... sound that was vigorous, intensive and clear, yet agreeable, sonorous and not sharp."[57] Klaas Bolt adds that "the organs built during the Renaissance period (roughly 1530-1630) were distinguished tonally by richness and variety of colour."[58] Unfortunately the distinguishing sound of the *Oude Kerk* organ is gone,

but many extant instruments of Niehoff and other builders offer these clues to the sound of the instrument.

An organ with an electric blower is built with an infinite supply of wind; very rarely does an organist have to compensate for lack of wind. Unsteady winding and insufficient wind supply were problems of renaissance organs, but organ-builders overcame the problems by building double wind chests for larger divisions. Each chest of the *Bovenwerk* and *Rückpositiv* of the *Oude Kerk* organ was designed for a specific purpose, and the two would not be used together with full registration. For example, when using the *Rückpositiv*, the lower chest could be used for a plenum registration contrasting with the *Principael* plenum; the upper chest could accompany or provide a solo registration. The *Bovenwerk* operated on the same principle.

It is important that today's performer understand the organization and design of such an instrument because such knowledge reveals that despite problems with winding, the renaissance organ featured a diversity of registrations. As shown below, the possible stop combinations of the *Oude Kerk* organ allow for very colourful options.

Today's neo-baroque organ hinders the performance of Sweelinck's works by its uniform ranks of pipes and variable scaling techniques. Many of Sweelinck's works, including *Psalm 116* contain florid treble lines with chordal accompaniment. This compositional style works exceptionally well on the widely scaled and multiple treble pipes of the *Oude Kerk* but on the modern organ, the treble drowns in the sonority of the supporting homophonic texture. This can be corrected. The performer should explore the use of two

manuals with varying degrees of similar registration so that the treble lines can be accentuated as they naturally would have been on the *Oude Kerk* organs. This type of manual manipulation can serve renaissance keyboard music well on the modern organ.

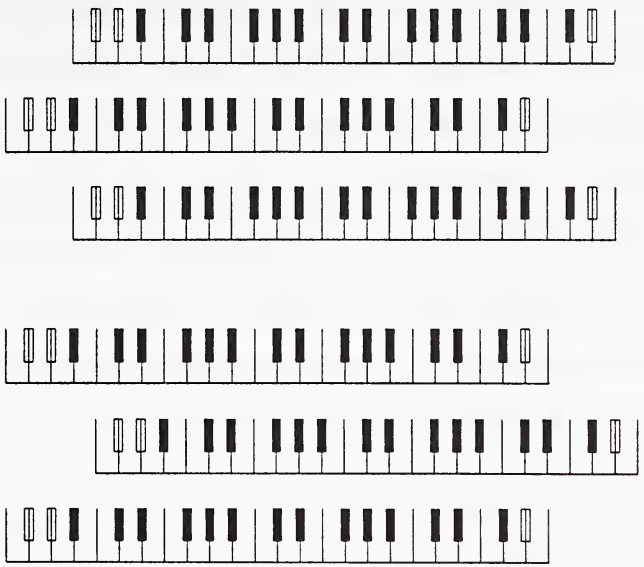
The *Principael's* function on the *Oude Kerk* organ was quite unusual. A remonstrance for the 1659 renovation claims that the builder "... made all three keyboards aligned over each other, which before this work, were misaligned."[59] Several factors point to the *Principael* keyboard being a shifted keyboard. The *Rückpositiv* and the *Bovenwerk* keyboards (the upper and lower keyboards) could be coupled together but not to the *Principael*, the middle keyboard. The technical difficulties involved in coupling a shifted manual are very great. A second factor stems from the difference in character between these divisions. The *blockwerk* (the medieval feature on the *Principael*) and the colourful potentials of the upper and lower manuals (a renaissance characteristic) perform different functions. The *Principael*, possibly pitched suitably for liturgical functions (*Chor-thon*), would have been used to accompany the choir and play alternating verses with the sung verses of the mass. The other divisions were possibly devised to perform with instruments in concerts and probably pitched to the higher *Cammer-thon*.

The idea of having two differently pitched manuals on a single instrument is not a foreign one. Arnault de Zwolle knew of two keyboard types before Sweelinck, one beginning on "b" and the other on "f",[60] albeit on different instruments. This led to difficulties for the player as he had to transpose in order to accompany choir or instruments, depending on the pitch of the organ. This is documented by both Schlick and Praetorius.[61] Mendel illustrates several transpositional devices commonly thought to be used for keyboard music before

1600.[62] Several seventeenth-century English manuscripts offer explicit instructions for transposition.[63] Unfortunately, there are no examples of organs with transposing keyboards but there is one extant example of a double harpsichord built by Ruckers, a family of harpsichord builders from Antwerp (ca. 1579 - ca. 1706). These harpsichords were two-manual instruments, the lower manual a transposing keyboard shifted a fourth down. Grant O'Brien believes that this was common on the organ as well[64] and the large organ in the *Oude Kerk* seems to support this. Edskes agrees and adds that "... it [the *Principael* manual] might have been a fourth or fifth to the left, again in view of the transposition practices."[65]

Further proof can be gathered from Sweelinck's music. Use of the echo of course permeates the echo-fantasias, and also appears in *Psalm 116*. The *Principael* manual not only provided a colour change for the echo, it shortened the leap between the main motive and the echo (Ex. 12). The middle manual was based an octave lower than the other two manuals and was possibly even pitched a fourth or fifth higher or lower. The leap of a twelfth in m. 117 is reduced to a "unison" hop to the middle manual from either two manuals on the second set of keyboards in example 12. Executing the echo device on such a transposing keyboard might offer some explanation as to why the echo-fantasia flourished only with Sweelinck. The transposing keyboard on the *Oude Kerk* organ appears not to have restricted Sweelinck, but rather to have stimulated a unique keyboard genre and a compositional tool.

Ex. 12 Theoretical alignment of the *Oude Kerk* organ keyboards



The size of the keys was similar to modern dimensions. Existing records and fragments of extant instruments suggest that the accidentals were slightly broader than today, although all the keys were considerably shorter.[66] "The manner of playing was probably light as the chests carried relatively few ranks and the pallets were not very large ...," despite a high wind pressure.[67] The extant Oosthuizen organ from 1511 has a high wind pressure (87 mm), short keys and a shallow action, allowing for fast and precise finger movement. The pedals of the *Oude Kerk* organ were broader and distributed under the compass of the keyboard. The number of keys for the manuals is debatable, but it is now generally accepted that the manuals ranged from F G A - g" a" (38 notes) and the pedal from F G A - c' (18 notes).[68]

Performance Considerations

The variation cycle on *Psalm 116* will be used to illustrate how the essential requirements of Sweelinck's keyboard works can be captured on today's instruments. The first two variations are a unit in which the psalm tune is unadorned. This permits the use of solo registrations; one could use the solo stops on the manuals or the pedal. The accompanying voice of the bicinium provides a link to the second variation; therefore, the registration for this voice should not change. The desired registration should be transparent enough to articulate the figural technique of the two accompanying voices in the second variation. The *Oude Kerk* organ allows for many possibilities; a few are listed below:

	Bicinium (1st Var.)	Tricinium (2nd Var.)
1)	Solo: BW Principal 8' Acc.: RP Rohrflute 4'	Solo: Ped Nachthorn 2' Acc.: RP Rohrflute 4'
2)	Solo: RP Krummhorn 8' Acc.: BW Openflute 4'	Solo: Ped Nachthorn 2' Acc.: RP Openflute 4'
3)	Solo: BW Zink 8' Acc.: RP Quintadena 8'	Solo: PedNachthorn 2' Acc.: RP Quintadena 8'

The first two variations require a gentle sound, making the registrations listed above effective. For performance on the Casavant organ in Convocation Hall at the University of Alberta (as heard in my accompanying recording), I suggest the Spitzflöte 4' on the *Hauptwerk* for the accompanying voices and the Krummhorn 8' on the *Rückpositiv* as the solo registration in the first variation. The Waldflöte 2' on the *Schwellwerk* could be coupled to the pedal for the second variation solo registration.

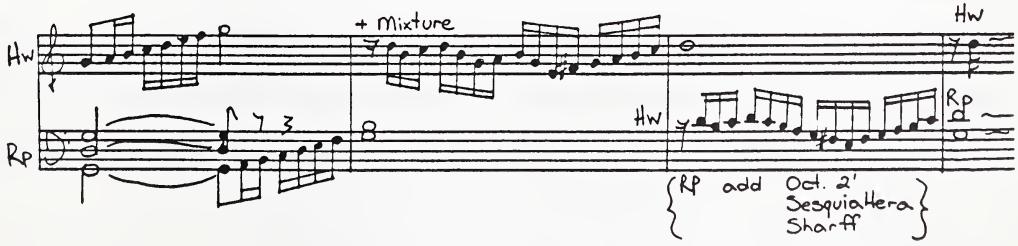
The last two variations in the cycle can be played on a stronger registration because of the homophonic nature of the accompanying voices and the vitality of the embellished melody. On the *Oude Kerk* organ, two options for registrations in the third variation are:

1st Combination			2nd Combination	
Treble:	RP	Quintadena 8' Rohrflute 4' Bärpfeife 8'* Schalmei 4'	BW	Trumpet 8'
Acc:	BW	Principal 8' Openflute 4' Gemshorn 2'	RP	Principal 8' Octave 4'

* a reed stop[69]

The first registration is unique to Dutch organs and is still commonly used as a solo stop combination. I suggest imitating this sound on the Convocation Hall organ by using the Principal 8', Octave 4', Nasat 2 2/3, Blockflöte 2' and the Terz 1 3/5 (a rich sounding Cornet) on the *Hauptwerk* for the solo line, supported by the Gedackt 8' and Octave 4' on the *Rückpositiv*.

The bridge to the last variation allows for change to a fuller registration and for playing on one manual. The ascending G scale in m. 105 is imitated by the left hand at the end of the same measure. The sixteenth-note rest in the right hand at the beginning of m. 106 provides sufficient time to draw additional stops (Ex. 13).

Ex. 13 ***Psalm 116*** **(mm. 105-108)**

On the *Oude Kerk* organ one might add the Scharff of the *Rückpositiv*; on the Casavant organ in Convocation Hall, the Mixture of the *Hauptwerk*. The left hand imitates the right hand motif in m. 107, and should be played on the same manual as the right hand. This arrangement could be maintained on the *Oude Kerk* organ but cannot on the modern organ. The multiple and rounder-sounding treble ranks of Sweelinck's instruments are not available on the Convocation Hall organ. Manual manipulation must be used to maintain the integrity of the treble line in this variation. The problem is easily solved by preparing the *Rückpositiv* on the Convocation Hall organ with a similar registration to that employed on the *Hauptwerk* while both hands are playing on the Hauptwerk in m. 107. I suggest adding the Oktave 2', the Sesquialtera II and the Scharff to the registration suggestion in the third variation. At the return to the homophonic texture in m. 108, the left hand is played on the *Rückpositiv* and the treble is accentuated (Ex. 13).

The shifted manual was possibly used for echo in mm. 116-120. The *Principael*, if shifted a fourth or fifth to the left, might have used the Principal 16', Principal 8' and Scharff played an octave higher than indicated in the score. The leap to the echo motif (scored an octave lower than the initial motif) would have involved a "unison" skip to the *Principael*. The Convocation Hall organ requires leaps of the full octave as it does not have a transposing keyboard. The performer may opt to drop the octave as indicated in the score, or to play the echo motif on the *Rückpositiv* where the registration is softer than on the *Hauptwerk*. Another option includes using a third manual subtly to highlight this effect and to explore the possible colour change included in the use of the transposing keyboard. I have elected to do this on the Convocation Hall organ recording by playing the echos on the *Schwellwerk* using the Offenflöte 8', Octave 4', Mixture, and Fagott 16'.

The tempo of *Psalm 116* need not be adjusted for performance on a modern organ. Many scholars place the renaissance tactus for duple meter (which was established as the half note for Sweelinck's *Psalm 116*) between 40 and 60 on our metronome.[70] At about 56 MM for the half note, the pace is quick but manageable, even with the live acoustics of the *Oude Kerk* (approximately 6 seconds of reverberation). Unfortunately, early fingering, live acoustics, and early twentieth-century misconceptions that pieces were generally played slower in earlier eras have been excuses for slow performance tempi. The recordings by Tomoko Akatsu (playing on the one manual organ of 1521 in Oosthuizen, Holland) and Ton Koopman (playing on the two manual organ of *Schloss Fredricksborg* of ca. 1610 in Hillerød, Denmark) are examples of slow tempi (see Appendix 2). In the recording on the Convocation Hall organ, the listener will hear that performance at a quicker tempo is clear, manageable and above all, vibrant.

Improvised ornamentation was undoubtedly used by Sweelinck. His music found in the *Fitzwilliam Virginal Book*[71] and the manuscript *Ly A 1*[72] show extensive use of the English Virginalists' style of ornamentation. Curtis suggests that the abundance of ornament markings in these major sources of Sweelinck's keyboard music "... argues strongly for the necessity of adding them to other works if we are to restore Sweelinck's intention."[73] Ornamentation should not be randomly added. In the two recordings of *Psalm 116* mentioned above, Tomoko Akatsu refrains from adding ornamentation while Ton Koopman adds ornaments frequently and somewhat arbitrarily. It seems that Akatsu avoids ornamentation in order to maintain the authenticity of the score as opposed to authenticity of performance, while Koopman adds ornamentation to maintain interest.

The psalm tune in the first two variations is contrasted by florid, figurative lines and could be left as spare as found in the score. I suggest ornamentation in three places in these two variations: first, in m. 17 where the melody begins on the same note of the phrase preceding it and warrants a mordent for clarification; second, a short trill on the down beat of the figure used in measures 25-27; third, a flourish at the closing of the second variation. The third and fourth variations, which feature embellishment of the psalm tune, require little additional ornamentation except to emphasize the psalm tones hidden in the figural texture.

Misconceptions about the depth of Sweelinck's compositional organization, and misunderstandings concerning the organs in the *Oude Kerk* have resulted in few and often dull performances of Sweelinck's keyboard music. Indifference to his music, and opinions that regard Sweelinck's keyboard works as historically significant but musically uninteresting, have allowed these pieces to be overlooked. Sweelinck's works are masterfully constructed, both in detail of figuration and in overall design. His keyboard works were performed on instruments that offered unusual opportunities and rich colours. These points must be appreciated and understood by today's performer, particularly the church organist whose performances of Sweelinck's Genevan Psalm and Chorale variations carry these rich liturgical song settings of the Renaissance into the twentieth-century.

ENDNOTES

1. Frits Noske, "Forma Formans," *International Review of Aesthetics and Sociology of Music* 7 (1976), 43-62. This is an inaugural address to the institute of Musicology in Amsterdam, 1969. Cf. the discussion of the same subject in Noske's book "Sweelinck," Vol. 22 of the *Oxford Studies of Composers* (London: Oxford University Press, 1988), 121-129.

2. Robert L. Tusler, *The Organ Music of Jan Pieterszoon Sweelinck* (Bilthoven, Holland: A.B. Creyghton, 1958), 73.

3. Willi Apel, *The History of Keyboard Music to 1700*, trans. Hans Tischler (Bloomington, Indiana: University Press, 1972), 266.

4. Apel, *Keyboard Music*, 333.

5. Frits Noske, "Sweelinck," Vol. 22 of the *Oxford Studies of Composers* (London: Oxford University Press, 1988), 105.

6. Noske, "Forma Formans," 47.

7. Jan Pieterszoon Sweelinck, *Opera Omnia*, Vol. 1 Fasc. 2, ed. Alfons Annegarn (Amsterdam: Vereniging voor Nederlandse Muziekgeschiedenis, 1974), 58-63.
Cf. discussion of the authenticity of *Psalm 116* as one of Sweelinck's works in Alan Curtis, *Sweelinck's Keyboard Music: A Study of English Elements in Seventeenth-Century Dutch Composition* (Leiden: Leiden University Press, 1972), 60, 79-80.

8. Noske, "Sweelinck," 125.

9. The only source for *Psalm 116* comes from the Berlin Deutsche Staatsbibliothek, Lübbenauer Orgeltabulaturen Manuscript, Lynar B 2 (Ly B 2). There is no time signature indication given for any of the variations, nor are there any tempo indicators. Other Genevan Psalm variations have the time signature ¢ which seems to correspond with the natural tactus of the Genevan Psalm. It is likely that the time signature for *Psalm 116* is also ¢.

10. Cf. endnote #7.

11. Tusler, *Organ Music*, 45.

12. Alan Curtis, *Sweelinck's Keyboard Music: A Study of English Elements in Seventeeth-Century Dutch Composition* (Leiden: Leiden University Press, 1972), 126-143.

13. Noske, "Sweelinck," 106.

14. Noske, "Sweelinck," 132.

15. Robert L. Tusler, "Style Differences in the Organ and Clavicembalo Works of Jan Pieterszoon Sweelinck," *Tijdschrift Vereniging voor Nederlandse Muziekgeschiedenis (VNM)* 18 (1959), 162-63.

16. Frits Noske, "Sweelinck's Keyboard Music: Organ or Harpsichord?" *Tijdschrift VNM* 19 (1960), 80-83. Cf. Zuiderveld, "Dutch Keyboard Compositions," 56. The renaissance organs were supplied with wind by a system of bellows requiring manual labour. Since this labour would also be required for practising, one can safely assume that the harpsichord and clavichord were also used as practise instruments. This was common until the discovery of electricity and the development of the electrified blower.

17. Bernard van den Sigtenhorst Meyer, *Jan P. Sweelinck en zijn Instrumental Muziek,* (The Hague: Servire, 1946), 94. Trans. author "... Verder heeft hij naast de psalmen, die natuurlijk in de eerste plaats in aanmerking kwamen gespeeld te worden, vanzelfsprekend zijn eigen werken laten horen, zijn fantasieën, toccatas, echo-fantasieën en koraal-variaties."

18. This date is used for the beginning of Sweelinck's tenure because there is no mention of any other organist in the records of the Oude Kerk between the death of Sweelinck's father's successor Cornelis Boskoop and Sweelinck himself. Sweelinck would have been 14 years old.

19. M. Vente, *The Organ and its Music in the Netherlands 1500-1800* (Antwerp: Mercatorfonds, 1971), 164.

20. G. LeCerf and E.R. Labande, eds. *Les Traites d'Henri-Arnault et de divers anonymes* (Paris: Auguste Picard, 1932).

21. Arnold Schlick, "Spiegel der Orgelmacher und Organisten," trans. Elizabeth Berry Barber, in *Bibliotheca Organologica* 58, ed. Peter Williams (Buren, The Netherlands: Frits Knuf, 1980).

22. Michael Praetorius, *De Organographia* in Syntagma Musicum II (Wolfenbüttel, 1619), fasc. ed. in *Documenta Musicologica*, ed. P. Williams (Kassel: Bärenreiter, 1976), 81-203.

23. Cor Edskes, "The Organs of the Oude Kerk in Amsterdam at the time of Sweelinck," trans. C.W. Schoneveld, in Alan Curtis' *Sweelinck's Keyboard Music*, 198. Oct. 7, 1682 contract for reconstruction "... dat de voorsz. orgelmaekers het groot orgel in de gemelde kerck, 'twelck nu alrede voort geene datter in is, een van de beste orgels van [t'] Christenrijck mach werden geroemt, ..."

24. Vente, *The Organ*, 57.

25. Henry A. Bruinsma, "The Organ Controversy in the Netherlands Reformation to 1640," *Journal of the American Musicological Society* 7 (1954), 205-206.

26. Klaas Bolt, "The Character and Functions of the Dutch Organ in the Seventeenth and Eighteenth Centuries," in *C.B. Fisk Organ Builder* 1 (Easthampton: The Westfield Centre for Early Studies, 1986), 9.

27. Vente, *The Organ*, 75-79.

28. Edskes, "The Organs of the Oude Kerk," 188-200.

29. Ibid., 170.

30. Schlick, "Spiegel," 73-91.

31. Mark Lindley, "Early 16th Century Keyboard Temperaments," *Musica Disciplina* 28 (1974), 129-151. Cf. "Fifteenth Century Evidence for Meantone Temperament," *Proceedings of the Royal Musical Association* 102 (1975-76), 37-51.

32. Harold Vogel, "Tuning and Temperament" in *C.B. Fisk Organ Builder* 1 (Easthampton: The Westfield Center for Early Studies, 1986), 239.

33. Curtis, *Sweelinck's Keyboard Works*, 145-47.

34. Edskes, "The Organs of the Oude Kerk," 182.

35. Such external variables include temperature, pipe materials, pipe dimensions (varying foot lengths from country to country), varieties of temperament, and paper shrinkage.

36. Cf. articles listed in bibliography by Ellis, Mendel, Meeus, and Thomas and Rhodes. Two pitches suggested by Schlick were interpreted by Ellis to be a=377 hz. and a=504.3 hz. (approximately 2.6 semitones lower and 2.3 semitones higher than the present a=440 hz.). Arthur Mendel suggests these pitches to be 3.4 semitones above and below our a=440 hz. Praetorius' pitches are interpreted by Ellis as being a=424 hz. and a=567.3 hz. (approximately 2.5 semitones lower and 4.5 semitones higher than a=440 hz). Mendel recommends pitches 3.5 and 1.5 semitones higher than our a=440. W.R. Thomas and J.J.K. Rhodes advocate pitches closer to Ellis. Meeus says that descriptions of pitch by Schlick and Praetorius are also concerned with the description of "b" and "f" keyboards (Tastenbild).

37. Praetorius, *De Organographia*, trans. Arthur Mendel, 16. "In Engellandt haben sie vorzeiten, und in den Niederlanden noch anitzo ihre meiste blasende *Instrumenta* umb eine *tertian minorem* tieffer, als jtzo unser Cammerthon, ... Wie dann auch der vortreffliche Instrumentmacher zu Antorff *Johannes Bossus* die meisten Clavicymbeln und Symphonien, auch darein gemacht Pfiefenwerke, in demselbigen Tono intoniret und gestimmet."

38. Arthur Mendel, "Pitch in the 16th and 17th Centuries -- Part II," in *Studies in the History of Musical Pitch* (Amsterdam: Frits Knuf, 1968), 128.

39. Alexander Ellis, "On the History of Musical Pitch" in *Studies in the History of Musical Pitch* (Amsterdam: Frits Knuf, 1968), 293.

40. Edskes, "The Organs of the Oude Kerk," 182.

41. Praetorius, *De Organographia,* 107.

42. Schlick, *Spiegel,* trans. Barber, 91-96.

43. Vente, *The Organ,* 50. Cf. Peter Williams, *A New History of the Organ* (Bloomington: Indiana University Press, 1980), 65-67.

44. Cecil Clutton, "Arnault's MS," *The Galpin Society Journal* 5 (March 1952), 7.

45. Maarten Vente, *Die Brabanter Orgel* (Amsterdam: H.J. Paris, 1963), 12.

46. Edskes, "The Organs of the Oude Kerk," 183.

47. Ibid, 183.

48. Praetorius, *De Organographia,* 104-107.

49. Vente, *The Organ,* 42. The "Adoration of the Lamb" altar piece in Ghent by Jan Van Eyck (1432) shows this clearly.

50. Praetorius, *Theatrum Instrumentorum: Scaigraphia* (Wolfenbüttel, 1620), fasc. ed. in *Documenta Musicologica*, ed. P. Williams (Kassel: Bärenreiter, 1976), Plate XXVI.

51. Edskes, "The Organs of the Oude Kerk," 174.

52. Ibid., 177.

53. Ibid., 179. In contrast to this, modern scaling techniques for pipework result in uniform sound. The bass is proportionally wide to the middle pipes and the treble is proportionally narrow.

54. Ibid., 179.

55. Clutton, "Arnault's MS," 8.

56. Edskes, "The Organs of the Oude Kerk," 175.

57. Ibid., 179.

58. Bolt, "Function of the Dutch Organ," 3.

59. Edskes, "The Organs of the Oude Kerk," 197. "10. Alle de drei clavieren in t'voorsz. orgel reght oover malkander gemaackt, die voordese schieff ende ingevallen waeren."

60. Nicolas Meeus, "Some Hypotheses on the History of Organ Pitch before Schlick," *The Organ Yearbook* 6 (1975), 45.

61. Schlick, *Spiegel*, Chapters 2 and 3. Praetorius, *De Organographia*, 14-17.

62. Mendel, "Devices for Transposition in the Organ before 1600," *Acta Musicologica* XXI (1949), 24-40. Also appears in *Studies in the History of Musical Pitch* (Amsterdam: Frits Knuf, 1968), 170-186.

63. J. Bunker Clark, *Transposition in Seventeenth-Century English Organ Accompaniments and the Transposing Organ* (Detroit: J. Bunker Clark, 1974), 43.

64. Grant O'Brien, *Ruckers: A Harpsichord and Virginal Building Tradition* (Cambridge: Cambridge University Press, 1990), 228.

65. Edskes, "The Organs of the Oude Kerk," 181.

66. Ibid., 177.

67. Edskes, "The Organs of the Oude Kerk," 177.

68. See this discussion in Edskes, "The Organs of the Oude Kerk," 170-182.

69. Edskes, "The Organs of the Oude Kerk," 184. Cf. Peter Williams, *The European Organ 1450-1850* (Bloomington: Indiana University Press, 1966), 219.

70. Anthony Newman, *Bach and the baroque: a performing guide to baroque music with special emphasis on the music of J.S. Bach* (New York: Pendragon Press, 1985), 24 and Margaret Murata, "Pier Francesco Valentini on Tactus and Proportion" in *Frescobaldi Studies*, ed. A. Silbiger (Durham: Duke University Press, 1987), 335-346.

71. J. A. Fuller Maitland and W. Barclay Squire, eds. *The Fitzwilliam Virginal Book* 2 Vols. (New York: Dover Publications, 1963), XCVI, CXVIII, CXLIV, CCXVII.

72. *Lübbenauer Orgel Tabulaturen Manuscript, Lynar A1* (Berlin Deutsche Staatsbibliothek, Berlin.

73. Curtis, *Sweelinck's Keyboard Music*, 205.

Organs of the Oude Kerk at the time of Sweelinck
as translated by Cor Edskes from
the contract of September 1, 1567.[1]

Large Organ

The large windchest of the Principael.
The large "Doef" standing in front: 12 foot
an Octave
a Mixture
Scharff
These stops constitute the 12 foot Principal chorus

Above this Great lie another two windchests, one above the other.
a 6 foot "Doef"
a 6 foot Rohrflute
a 3 foot open Flute
a Nasard sounding on a fifth
a 1 1/2 foot Gemshorn
a Sifflöte
a Zimbel
a Zink
a Trumpet sounding 6 foot

The Pedal
a 6 foot Trumpet with a Nachthorn (2 foot)

The Rückpositif also has two windchests.
a 6 foot "Doef" of tin, standing in front
a 3 foot Octave
a Mixture
a Scharff

These stops constitute the Principal chorus
a 6 foot Quintadena
a 3 foot Rohrflute
a Sifflöte
a Bärpfeife
a six foot Krummhorn of tin
a 3 foot Schalmei

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[1] Cor Edskes, "The Organs of the Oude Kerk in Amsterdam at the time of Sweelinck" trans. C.W. Schoneveld, in Alan Curtis, *Sweelinck's Keyboard Music*, (Leiden, Holland: Leiden University Press, 1972), 163-200. This appendix contains the English translation and original Dutch language of the documents pertaining to these organs.

The Small Organ

A Windchest with an upper chest with nine stops.
- a 3 foot "Doef" of fine tin sounding at 6 foot
- a 6 foot Rohrflute
- a Mixture
- a Scharff
- a 1 1/2 foot Octave

These stops are the Principal chorus
- a 6 foot Quintadena
- a Zimbel
- a Gemshorn
- a Sifflöte
- a Schalmei

The Second Keyboard shall have a windchest by itself, in front.
- a 3 foot Rohrflute
- a Regal with
- a Krummhorn both sounding 6 foot
- a Trumpet in the 6 foot pedal

Manual Coupler
Tremulant
3 bellows

Modern Specification of both Organs in order of appearance on each windchest (front to back)

Large Organ

Hauptwerk
Principal 16'
Octave 8'
Mixture
Scharff

Pedal
Trumpet 8'
Nachthorn 2'

Bovenwerk

Lower Chest	Upper Chest
Principal 8'	Rohrflute 8'
Sifflöte 1'	Open Flute 4'
Gemshorn 2'	Zimbel III
Nasard 2 2/3	Trumpet 8'
	Zink 8' (treble)

Rückpositiv

Lower Chest	Upper Chest
Principal 8'	Quintadena 8'
Octave 4'	Rohrflute 4'
Mixture	Sifflöte 1 1/3'
Scharff	Schalmei 4'
	Bärpfeife 8'
	Krummhorn 8'

Coupler between RP and BW
Tremulant, probably for whole organ
6 bellows
Manual Compass F, G, A, to g" a": 38 notes
Pedal Compass F, G, A to c': 18 notes; linked to the HW

Small Organ

Hauptwerk

Lower chest	Upper chest
Principal 4'	Quintadena 8'
Rohrflute 8'	Zimbel III
Mixture	Gemshorn 2'
Scharff	Sifflöte 1 1/3' or 1'
Octave 2'	Schalmei 4'

Brustwerk

Regal 8'
Krummhorn 8'
Rohrflute 4'

Pedal
Trumpet 8'

Manual coupler
Tremulant, probably functioning for the whole organ
3 bellows
Manual Compass: F, G, A to g" a"
Pedal Compass: F, G, A to c'

The two recordings by Tomoko Akatsu[2] and Ton Koopman[3] are intended to provide the listener with an authentic sound from organs contemporary to the Oude Kerk organs. The one manual organ of 1521 in Oosthuizen, Holland shows the bold and rich sound of the meantone gothic/renaissance organ while the two manual organ of Schloss Fredricksborg of ca. 1610 in Hillerød, Denmark reveals the richness and colour of the stops of the late renaissance organ in north-west Europe. Both these extant organs are important and provide a better understanding of how the organ Sweelinck used sounded.

Oosthuizen, Holland (1511)

Prestant 8'
Bourdon 16' (17th c. addition)
Octaaf 4' (doubled from a')
Quint 3'
Woudfluit 2'
Sequialter II (17th c. addition)
(discant from c')
Mixtuur 2-3 ranks
F - 1 1/3 , 1
c'- 2, 1 1/3, 1
c"- 2, 2, 1 1/3

Keyboard: F G A -g" a"
Tremulant
Tuning: Meantone
Pitch: app. 1/2 tone
above a=440
Windpressure: 87 mm.

Organ in Schloss Fredricksborg in Hillerød, Denmark

Top Manual	Bottom Manual	Pedal
Principal 8'	Quintadena 8'	Grossen Gedact 16'
Klein Princ. 11'	Klein Gedactfl. 4'	Gemsshorn B 8'
Gedactfl. 8'	Super Gemshornlein 2'	Quintadeen B 8'
Gemsshorn 4'	Nasatt anderthalb	Queerfloiten b 4'
Nachthorn 4'	Kl. repetirt Zimbel I	Bauerfl. Basslein 1'
Gedacht Quint 3'	Blockpfeiffen Disc. 4'	Sordunen B 16'
Supergedachtfl. 2'	Krumbhorn 8'	Dolzian B 8'
Rancket 16'	Geigend Regal 4'	Jungfrawen Regal B 4'

Keyboard: C D E F G A B flat - c'''
Pedal: C D E F G A B flat to d''
Tuning: Modified meantone
Pitch: app. 1/2 tone above a=440

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[2] *Oosthuizen*, organist Tomoko Akatsu (Univox 6814 200, 1980).

[3] *J.P. Sweelinck: Organ Works*, organist Ton Koopman (Telefunken 6.35374, 1977).

Convocation Hall Organ

by *Casavant Frères Ltd. 1978*

Hauptwerk	Rückpositiv	Schwellwerk
Bordun 16'	Gedackt 8'	Offenflöte 8'
Praestant 8'	Praestant 4'	Schwebung 8'
Hohlflöte 8'	Rohrflöte 4'	Gemshorn 8'
Oktave 4'	Oktave 2'	Oktave 4'
Spitzflöte 4'	Quinte 1 1/3'	Querflöte 4'
Oktave 2'	Scharf IV	Waldflöte 2'
Blockflöte 2'	Sesquialtera II	Mixtur V
Terz 1 3/5'	Krummhorn 8'	Fagott 16'
Mixtur V	Tremulant	Trompete 8'
Trompete 8'		Tremulant
Rückwerk/Hauptwerk		
Schwellwerk/Hauptwerk		

Pedal

Subbass 16'	Tuning: a= 440 hz.
Oktave 8'	Temperament: equal
Gedackt bass 8'	Windpressure: 71 mm
Oktave 4'	
Mixtur IV	6 pedal pistons (toe)
Posanne 16'	8 general pistons (toe and manual)
Trompete 8'	6 pistons for each manual
Schalmei 4'	
Schwellwerk/Pedal	Pedal compass: CC to g'
Hauptwerk/Pedal	Manual compass: CC to g'''

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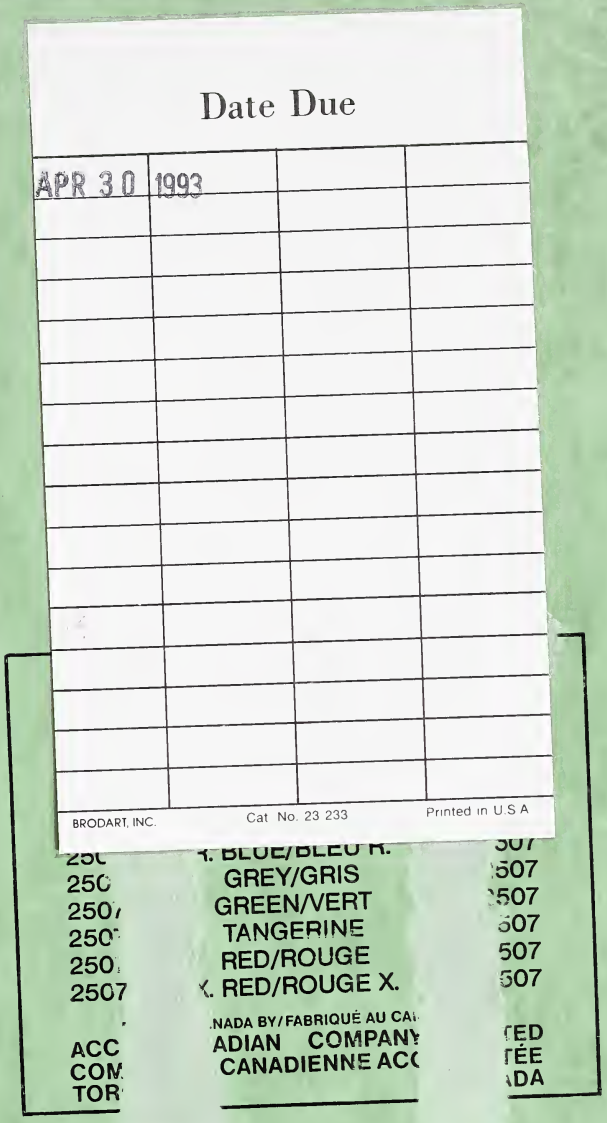
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